COMMUNICATIONS DISPLAY TERMINAL (CDT)

CDIF814 STATION CONTROLLER INTERFACE MODULE

INSTALLATION

1. GENERAL

1.01 This section contains information for installation of the CDIF814 interface module. Issue 1 of this section was a limited printing edition and was not generally available nor distributed within the Bell System. This reissue deletes CDIF811 module information (factory discontinued) contained in Issue 1, and it incorporates later engineering information for the CDIF814 station controller module; hereafter referred to as station controller.

1.02 The reissue of this section represents the first standard printing edition available for general Bell System distribution; therefore, change arrows have been omitted. TCN field change information notices have been included into this section, where applicable, up to the time of this printing.

1.03 The CDIF814 interface module is assembled at the factory and tested for correct operation. The interface module is generally installed into the CDT terminal cabinet prior to delivery to the customer. However, it can be ordered from the factory for separate field installation into a CDT cabinet or a Series 2541 Independent Buffer Set.

1.04 If the interface module is included in a factory-ordered CDT terminal or buffer set, only the module programming requires completion by the installer. However, if the module is field installed, the installer must perform the entire installation instruction. Before beginning installation, read the procedure thoroughly.

1.05 A CDPS802 low voltage power supply is required to operate the CDIF814 module. It is factory adjusted at the time of equipment manufacture and requires no additional adjusting at the time of installation into the CDT terminal. The only time adjusting may be necessary is when troubleshooting analysis, component part, or electronic part assembly replacement requires readjusting or checking of the adjustment in the affected circuit. For information concerning the power supply adjustments, refer to Section 578-100-700 or Section 578-101-700.

1.06 Troubleshooting information for the CDIF814 station controller is given in Section 578-110-303.

2. UNPACKING

2.01 The interface module should be unpacked as follows:

(1) Before opening shipping carton, observe all unpacking instructions, cautions, and labels.

(2) Open one end of the carton and remove all packaging details.

(3) Carefully lift the module out from the carton and remove protective liner.

(4) Remove the muslin bag. It contains necessary hardware to install the module.

2.02 If concurrent installation is required for the CDPS802 power supply, remove it from its carton. Retain the muslin parts bag and

interconnecting cable assemblies furnished with the power supply for later installation.

3. VISUAL CHECKOUT

3.01   Visual checkout should be as follows:

(1) Verify that the identification code on the module plate is the same as that required on the station arrangement drawings or equivalent.

(2) Visually inspect for damaged parts, loose circuit cards, broken wires, or shorted terminals.

(3) Check each circuit card to be certain that it is fully seated into its appropriate connector.

3.02   Refer to the appropriate station arrangement drawings specified by the responsible operating company engineer. Check that the module wiring options are correctly installed by comparing the wired options against the option chart provided in the CDIF wiring diagram package (WDP0325) and circuit descriptions.

3.03   Check that the correct circuit cards are installed into their respective receptacles according to Figure 1.

4. INSTALLATION

4.01   For related cable interconnection information between the modules of the associated equipment, refer to the associated installation instructions for the Series 2510 CDT terminal, Section 578-100-200; Series 2511 CDT terminal, Section 578-101-200; and Series 2540 or 2541 Buffer Set, Section 578-140-200.

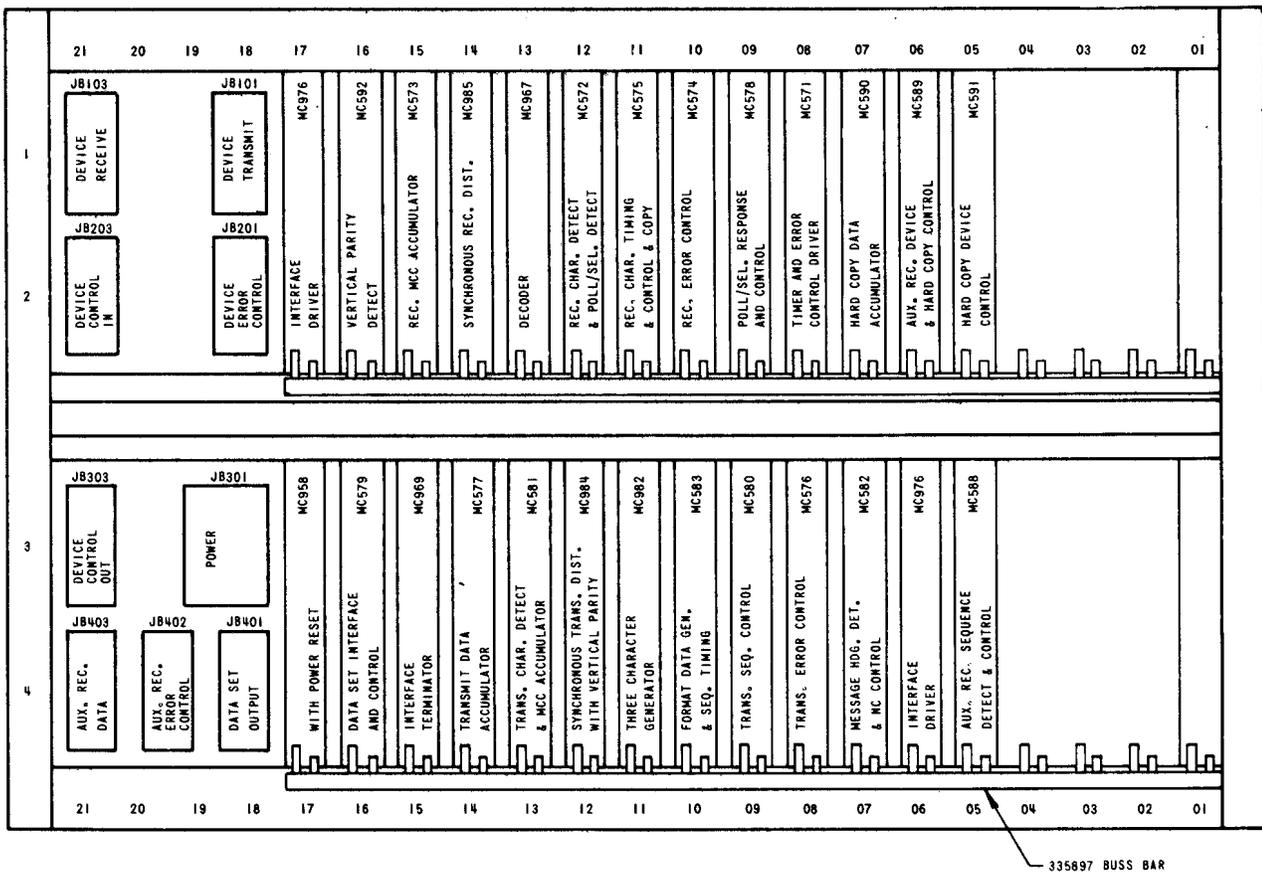| Col	Row 1 / Row 2 (top)	Row 3 / Row 4 (bottom)
21	JB103 DEVICE RECEIVE / JB203 DEVICE CONTROL IN	JB303 DEVICE CONTROL OUT / JB403 AUX. REC. DATA
20		JB402 AUX. REC. ERROR CONTROL
18	JB101 DEVICE TRANSMIT / JB201 DEVICE ERROR CONTROL	JB301 POWER / JB401 DATA SET OUTPUT
17	MC976 INTERFACE DRIVER	MC958 WITH POWER RESET
16	MC592 VERTICAL PARITY DETECT	MC579 DATA SET INTERFACE AND CONTROL
15	MC573 REC. MCC ACCUMULATOR	MC969 INTERFACE TERMINATOR
14	MC985 SYNCHRONOUS REC. DIST.	MC577 TRANSMIT DATA ACCUMULATOR
13	MC967 DECODER	MC581 TRANS. CHAR. DETECT & MCC ACCUMULATOR
12	MC572 REC. CHAR. DETECT & POLL/SEL. DETECT	MC984 SYNCHRONOUS TRANS. DIST. WITH VERTICAL PARITY
11	MC575 REC. CHAR. TIMING & CONTROL & COPY	MC982 THREE CHARACTER GENERATOR
10	MC574 REC. ERROR CONTROL	MC583 FORMAT DATA GEN. & SEQ. TIMING
09	MC578 POLL/SEL. RESPONSE AND CONTROL	MC580 TRANS. SEQ. CONTROL
08	MC571 TIMER AND ERROR CONTROL DRIVER	MC576 TRANS. ERROR CONTROL
07	MC590 HARD COPY DATA ACCUMULATOR	MC582 MESSAGE HDG. DET. & NC CONTROL
06	MC589 AUX. REC. DEVICE & HARD COPY CONTROL	MC976 INTERFACE DRIVER
05	MC591 HARD COPY DEVICE CONTROL	MC588 AUX. REC. SEQUENCE DETECT & CONTROL

335897 BUSS BAR

Figure 1 - CDIF814 Interface Module (Viewed From Wired Side)

4.02   Refer to Section 574-300-200 for information concerning Model 37 RO teletypewriter installation. For installation information for the CDBU buffer module, refer to Section 578-120-201.

CAUTION: REMOVE ALL AC POWER INPUT CONNECTIONS FROM THE SET AND INTERCONNECTED EQUIPMENT BEFORE ATTEMPTING INSTALLATION OF THE INTERFACE MODULE OR LOW VOLTAGE POWER SUPPLY.

A.   Buffer Storage Set

4.03   The procedures to install the module into the cabinet slides, including the CDPS802 low voltage power supply into the buffer cabinet, are given in Section 578-140-700.

B.   CDT Terminal

4.04   Remove the CDT cabinet front by loosening the two TP333880 1/4-turn fasteners that secure the panel in place. Turn them counterclockwise, then lift and remove the front panel.

4.05   Unscrew the TP330306 bumpers from the rear panel of the CDT terminal cabinet. Twist the two TP333880 turn fasteners counterclockwise. The rear panel may now be lifted up and removed from the enclosure.

4.06   Install the TP335730 transformer assembly into the CDT cabinet from the rear of the enclosure. Position the assembly onto the mounting plate located at the back of the cabinet and above the existing transformer assembly for the CDPS803 power supply.

4.07   The primary winding of the transformers should be positioned to face the rear of the cabinet so that the secondary winding faces toward the front of the cabinet. Secure the transformers to the cabinet using the eight screws, lockwashers, and flat washers provided in the muslin parts bag.

4.08   Remove the two holding screws from the metallic top screen cover on the CDPS802 power supply. Connect the TP335735 cable assembly from the transformers to TA terminal block, as shown in Figure 2 and 9356WD contained in the CDIF wiring diagram package.

CAUTION: ALL AC POWER INPUT CONNECTIONS MUST BE REMOVED FROM THE WALL RECEPTACLE BEFORE ATTEMPTING MODULE INSTALLATION.

4.09   Connect the TP335752 cable assembly from the transformers to the CDPS802, TM terminal block, terminals 3 and 4 respectively.

4.10   Remove the four TP148756 sheet metal screws that hold the right side panel to the CDT cabinet. With the side panel off, remove the insulator cover from TS1 power distribution terminal block located on the floor of the enclosure cabinet in the rightmost position.

4.11   Connect the TP335736 cable assembly white-green wire terminal lugs to terminals 2 and 3 on TS1, as shown in Figure 2. Route the other end of the cable to TM terminal block on the rear of CDPS802 supply and connect it to terminals 4 and 5 respectively, as shown in Figure 2.

4.12   Connect the terminal lug of the TP335748 cable assembly to TM block terminal 1 on CDPS802, and route the other end to terminal block TM terminal 3 on the CDPS803 low voltage power supply of the CDT terminal.
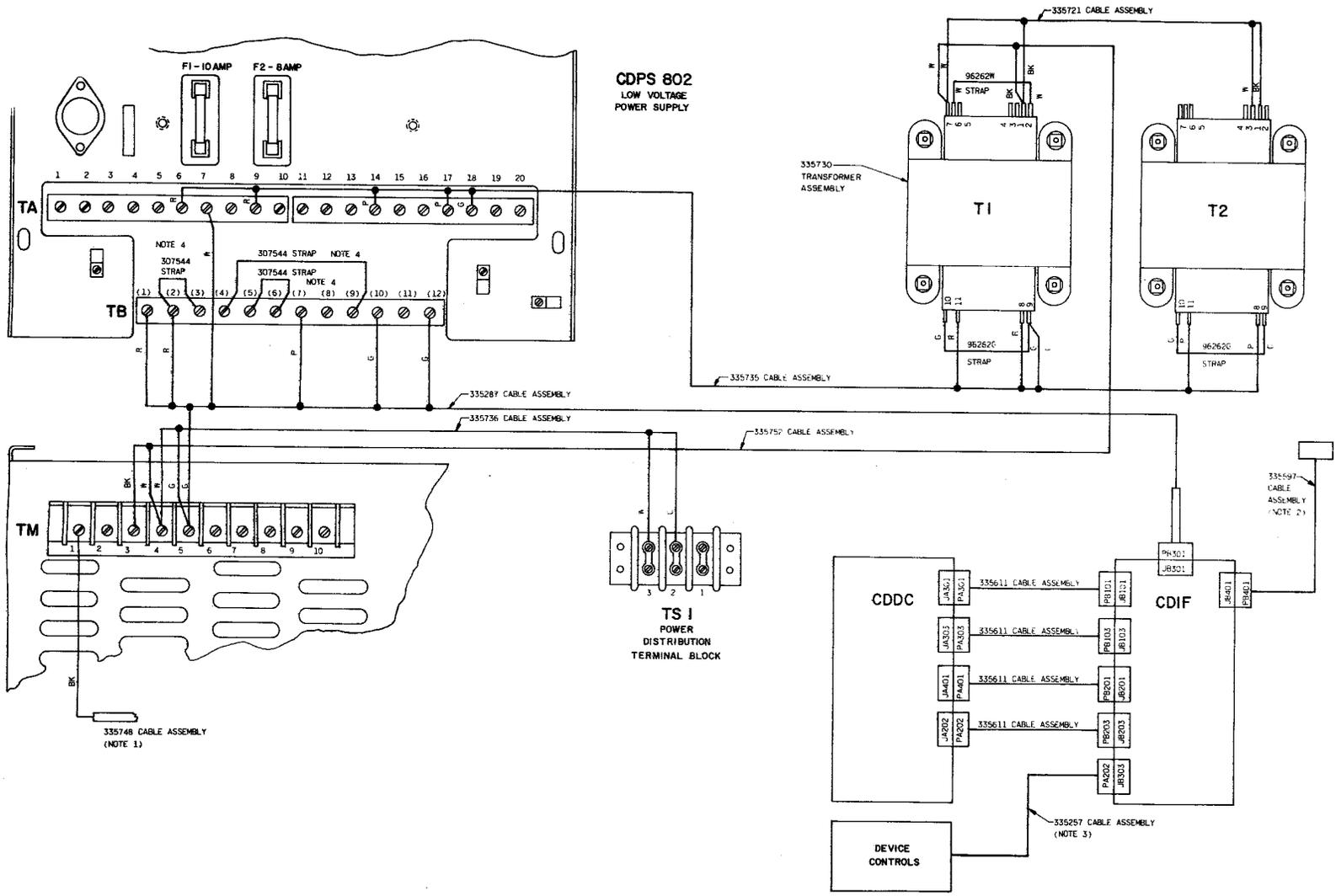
4.13   Connect the TP335287 cable assembly to TA, TB, and TM terminal blocks respectively on the CDPS802 supply, as shown in Figure 2.

4.14   Recheck the wiring steps outlined in 4.09 through 4.13. Make certain all terminal connections are connected and secured. Reinstall all screen covers and insulator covers onto the terminal blocks on the CDPS supply and CDT enclosure.

4.15   Install the CDPS802 power supply into the CDT enclosure. Slide the supply rearward into the cabinet and secure it to the frame, using the two TP173974 screws furnished in the muslin parts bag.
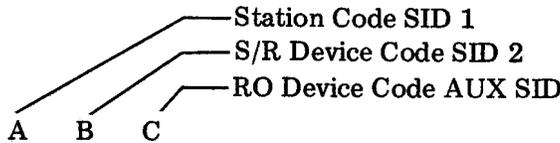
Programming

4.16   Before installing the station controller onto the CDT module shelf, or into the character buffer storage set, four circuit cards and two circuit card receptacles must be programmed.

Figure 2 - CDIF814 Cable Interconnections

Note 1: Connect the other end of the TP335748 cable assembly to terminal block TM terminal 3 on the CDPS803 low voltage power supply in the CDT terminal.

Note 2: The TP335597 cable assembly provides the output connection to a data set.

Note 3: Remove connector PA202 from JA202 and insert into JB303.

Note 4: Connect the TP307544 strap as shown only when the CDT does not contain a CDBU804 buffer unit. When a CDBU804 buffer unit is included in the CDT, discard the TP307544 strap.

4.17   Locate the station arrangement engineering drawing or equivalent, and determine what identification codes are to be programmed into the station controller module for SID 1 and SID 2. Any two-character sequence (examples: AB, AC, or CA) can represent SID 1 and SID 2. If the station is equipped with a receive-only hard copy (RO) device with a character buffer (optional), then the AUX SID must be programmed.

```
        ┌──Station Code SID 1
      ┌──S/R Device Code SID 2
    ┌──RO Device Code AUX SID

A     B     C
```

Receive Programming

4.18   Position the module so that the wired side is accessible and locate positions of circuit card receptacles ZB112 and ZB113, Figure 1.

4.19   Programming the receive portion of the module to decode received station and device codes, requires placement of two pairs of TP147307 wire straps between the wired pins of XZB112 and XZB113 circuit card receptacles for SID 1 and SID 2 respectively. If an AUX SID code is required, two TP343650 program straps must be wired from XZB305 to XZB113 connector receptacles.

> Note: If an auxiliary receive-only hard copy (RO) device is not used with the station controller, only program the station and device codes for SID 1 and SID 2. If there is no auxiliary receive-only device, do not program the AUX SID character.

4.20   Table A is a listing of row and column coordinates for each alpha and graphic code available for selection. Find the appropriate terminals for the row and column in which each of the SID characters are located.

4.21   Connect a program strap from each connector pin designation in the FROM column of Table B, to each respective row and column coordinate of a selected character in

Table A. Example: To program an SID of AR, place the straps as shown below.

DESCRIPTION	FROM	TO
SID 1 (COLUMN)	XZB112/12	XZB113/12
SID 1 (ROW)	XZB112/11	XZB113/17
SID 2 (COLUMN)	XZB112/7	XZB113/13
SID 2 (ROW)	XZB112/13	XZB113/18

Transmit Programming

4.22   Program the transmit circuitry of the station controller on TP322982 (MC982) circuit card located in module position XZB311. Remove the circuit card from XZB311.

4.23   The X, Y, and Z program screws are provided on the circuit card for programming the SID, station, S/R device, and auxiliary RO device identification characters. Screws X1 through X8 are the character bit levels (ASCII) to encode SID 1, station code. Screws Y1 through Y8 must be programmed for SID 2, the S/R device code. Screws Z1 through Z8 are for programming the auxiliary receive-only device AUX SID. If the auxiliary RO is not used, DO NOT PROGRAM Z bit levels; remove screws.

> Note: When programming the station controller SID identification characters for S1 and S2 on MC982, the station, device, and aux, SID characters must be programmed for the same characters as that done in the receive section of the module (4.21).

4.24   Locate SID 1 character or graphic symbol in the code chart in Figure 3 and program X screws for mark or space. Remove screw to make a bit level space or install screw to make a bit level mark.

> Example: To encode X screws for character A, remove screws from positions X2 through X6, and X8. Leave screws installed in position X1 and X7.

4.25   Program Y character screws for SID 2 using the same method given in 4.24.

4.26   Program the Z character screws for the second character of the AUX SID. If the auxiliary receive-only device is not used in the station, do not program Z character position.

TABLE A

COLUMN ROW	XZB113/10	XZB113/11	XZB113/12	XZB113/13	XZB113/14	XZB113/15
XZB113/16	SP	0	@	P	`	p
XZB113/17	!	1	A	Q	a	q
XZB113/18	"	2	B	R	b	r
XZB113/19	#	3	C	S	c	s
XZB113/20	$	4	D	T	d	t
XZB113/21	%	5	E	U	e	u
XZB113/22	&	6	F	V	f	v
XZB113/23	'	7	G	W	g	w
XZB113/24	(	8	H	X	h	x
XZB113/25	)	9	I	Y	i	y
XZB113/26	*	:	J	Z	j	z
XZB113/27	+	;	K	[	k	{
XZB113/28	,	<	L	\	l	¦
XZB113/29	-	=	M	]	m	}
XZB113/30	.	>	N	^	n	~
XZB113/31	/	?	O	_	o	DEL

TABLE B

DESCRIPTION	FROM	TO
SID 1 (COLUMN)	XZB112/12	XZB113*
SID 1 (ROW)	XZB112/11	XZB113*
SID 2 (COLUMN)	XZB112/7	XZB113*
SID 2 (ROW)	XZB112/13	XZB113*

*The terminal is determined from Table A and is dependent upon the SID for the station.

CONTROL
FUNCTIONS
NONTYPING

NONTYPING
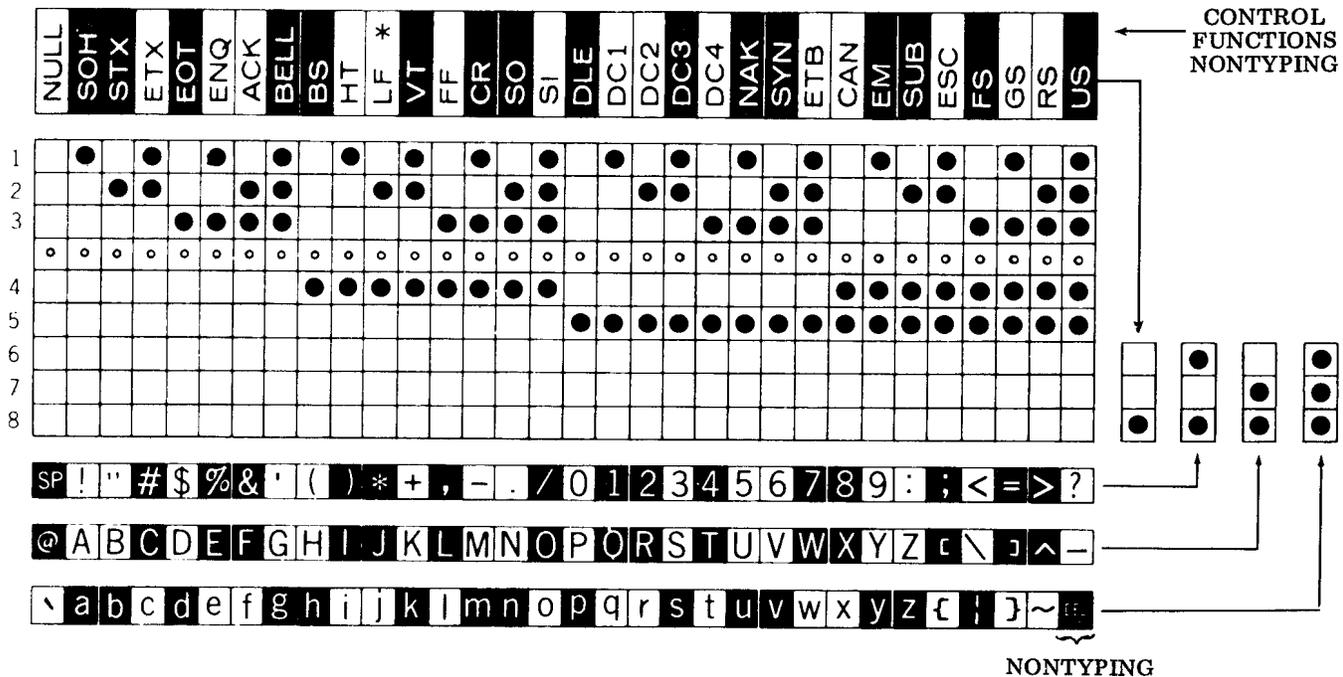
*Where appropriate, this character may have the meaning "NEW LINE" (NL).

● Mark to obtain even parity, the characters and functions shown with shaded backgrounds have 8th bit marking.

Upon receiving code combinations for \ through ~, monocase equipment such as Models 33 and 35 print respective characters @ through ∧.

Figure 3 - American National Standard Code for Information Interchange (ASCII)

Polling Option Programming

4.27   Program the station controller to respond to either a general poll (DC3) or specific poll (DC1), but not both.

			D	E	Specific Poll
POLL:	SID 1	SID 2	C	N	OPTION A
			1	Q	

|			D	E	General Poll
POLL:	SID 1	SID 2	C	N	OPTION B
			3	Q	

Note: If the general poll (DC3) is selected, the second character of the SID programming, 4.21 and 4.25 must be question mark (?) character.

4.28   Remove the MC572 circuit card from location ZB112 and check the option programmed. With a program screw in the loca-tion marked DC1, the station will respond to a Specific Poll only. To program the station controller to respond to a General Poll, remove the screw from DC1 and place the screw in the unmarked location on the circuit card. The unmarked location is directly beneath DC1 Specific Poll option.

Parallel Terminal Interface Terminator (MC969) Programming

4.29   The PTI terminator (MC969) interfaces the receive port of the station controller module to a PTI compatible transmitter device located a maximum of 1000 feet of interconnecting cable length away. Remove the MC969 circuit card from the CDIF module, position XZA315, and program it for option A. The point or arrowhead in the illustrations for A and B options indicate the origination and direction of control signals between the terminal equipment.
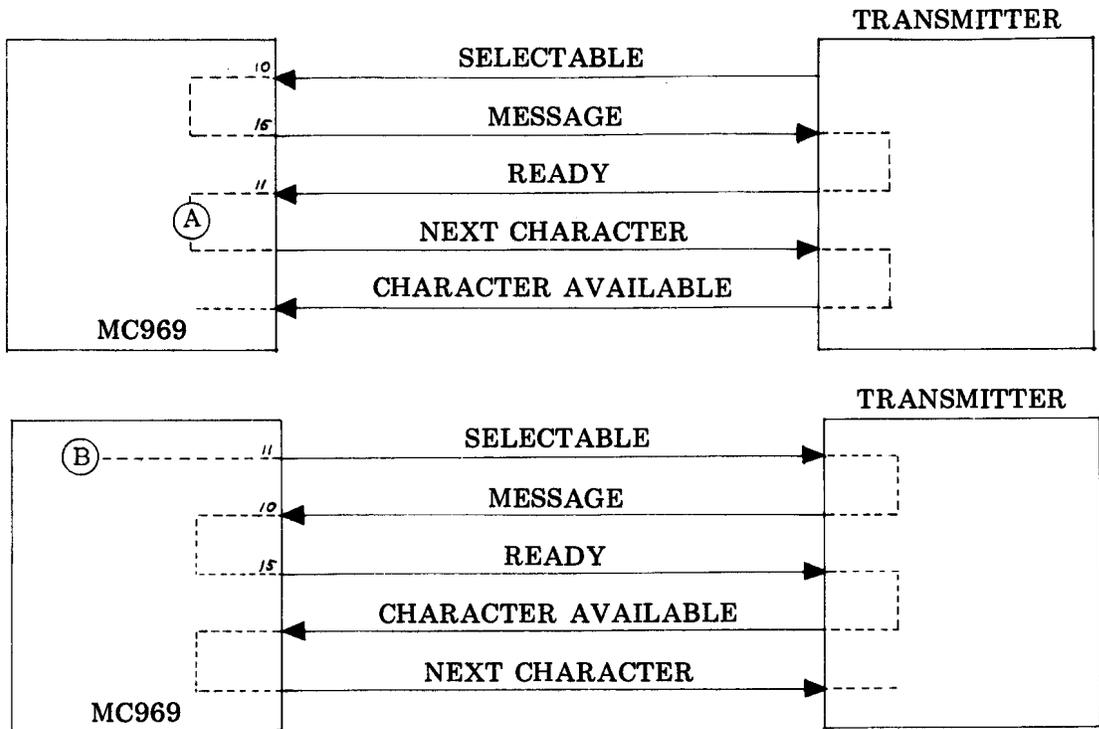
Note: Send/receive devices operating with the Station Controller use option A programming on the TP322969 (4.29) circuit card.

Synchronous Transmit Parity

4.30   Program the TP322984 (MC984) circuit card to generate a vertical parity bit to reflect either ODD or EVEN character parity into the serialized bit stream for transmission to the data set.

4.31   Remove MC984 from module position XZB312.

4.32   Determine if the primary data channel between the computer and station utilizes ODD or EVEN vertical parity and program MC984 accordingly.

4.33   Two programming screw locations are provided on MC984. The upper location is labeled EV (even) and the lower location is ODD. Program as instructed in 4.32.

4.34   After completing the module programming, install the module onto the shelf of the CDT terminal or onto the cabinet slides in the Buffer Storage Set following the procedures outlined in Section 578-100-702 or Section 578-140-700 respectively.

Vertical Parity Detect/Generate

4.35   The TP322592 (MC592) circuit card may be programmed to detect either even or odd parity errors of received data, or as an alternate, it may be programmed to generate correct parity to the receiving device if an odd or even (programmable) parity error should occur. The MC592 circuit must only be programmed to detect (4.38 and 4.39) or generate (4.37). Do not program for both or the MC592 circuit components may be damaged.

4.36   Remove the MC592 circuit from module position ZB116 and program for either 4.37 or 4.38 (and 4.39 if required).

4.37   GENERATE PARITY — Program the MC592 circuit to generate correct parity to the device on a parity error as follows: Install screw into designation A and remove option screws from designations B and C. To generate even parity, install screw into designation D; or if odd parity is desired, install screw

into designation E. Do not program for both D and E or circuit components may be damaged.

4.38   DETECT PARITY — Program the MC592 circuit to detect an odd or even parity error of received data with the option of generating an overwrite character (programmable for any character, 4.39) to the receive device as follows: Install screw into designation A and remove screw from designation B. To detect even vertical parity errors, install screw into designation D; or if odd vertical parity error detection is desired, install screw into designation E. Do not program for both D and E or circuit components may be damaged.

4.39   To send an OVERWRITE CHARACTER to the receive device on a detected parity error (4.38), install programming screw into designation C on MC592. Select the customer preferred overwrite character from the code chart in Figure 3. Program MC592 LEVEL screws, one through eight, for each of the overwrite character bit levels. Remove screw from bit level position for mark bit, or leave screw in for space.

4.40   Upon completion of MC592 programming, reinstall MC592 circuit into module receptacle position ZB116.

CDT Terminal

4.41   Unplug the TP335257 cable assembly connector from JA202 connector on the CDT display controller module and plug it into JB303 on the CDIF module.

4.42   Using TP335611 cable assemblies, interconnect the station controller module to the CDT display controller module as shown in Figure 2. Connect one end of the TP335597 data set cable (6 feet in length) to

JB401 and route the other end through the cable port provided on the bottom of the CDT enclosure to the data set.

4.43   Place the CDPS802 power on-off switch to "on" position for operation. Restore the CDT terminal for operation by replacing the enclosure front, rear, and side panels. Reverse their removal procedure.

5.   CABLING

5.01   Refer to the functional block diagram of the wiring diagram package for the location of input and output cable connectors.

5.02   Use the TP335611 cable assembly for all cabling between modules within a CDT terminal.

5.03   All external inputs to, or outputs from the interface module can be connected by customer-supplied cables interfacing with the TP335600 connector assembly.

5.04   The length of cable necessary for proper interfacing is as follows:

(1)   Any length not exceeding 1000 feet maximum for Parallel Terminal Interfacing (PTI) compatibility.

(2)   Any length not exceeding 50 feet maximum for cabling linking the data set to the send-receive device communication equipment is recommended. However, longer cables are permissible providing that the resulting load capacitance, measured at the interface point and including the signal terminator, does not exceed the requirements listed in Section 3 of EIA Standard RS-232-C (Electronic Industries Association).